

Beyond Gratitude and Gratitude:  
A Meta-Analytic Review of the Predictors of Restaurant Tipping

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RUNNING HEAD: Restaurant Tipping

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ABSTRACT

Every year consumers voluntarily give away billions of dollars to service workers in the form of tips. The voluntary nature of tipping raises interesting questions about why people tip and what factors influence their tipping decisions. These questions are addressed in a review of theoretical work on tipping and in a meta-analysis of 22 published and 14 unpublished studies examining the predictors of tip size in restaurant settings. Our findings suggest that tipping is predominantly affected by social expectations, server attractiveness, server friendliness and customer mood. Service quality and cost considerations appear to have only weak effects on tipping. The theoretical, methodological, and practical implications of these findings are discussed along with directions for future research.

## Beyond Gratitude and Gratitude:

### A Meta-Analytic Review of the Predictors of Restaurant Tipping

Consumers often give payments of money (called “tips”) to workers who have performed services for them. In fact, U.S. consumers tip approximately \$14 billion a year (based on an inflation adjustment of estimates by Pearl 1985). This behavior is notable, because tips are generally voluntary payments given after services have been rendered. Few consumers aspire to pay more than necessary for goods and services. Consumers’ resources are usually more limited than their wants, so consumers generally try to obtain things for the lowest possible price. Tipping represents a billion dollar exception to this general rule. It is an exception that raises interesting questions such as: “Why do rational consumers leave tips?” and “What factors influence consumers’ decisions about how much to tip?” These questions are addressed below in a quantitative review of research on restaurant tipping.

Our review is divided into several major sections. First, we analyze tipping from a rational choice perspective and develop propositions and hypotheses about the determinants and predictors of tip size. Then we describe the methods used to meta-analyze empirical tests of the hypothesized relationships. Finally, we discuss the results of our meta-analysis along with their theoretical, methodological and practical implications.

This review makes new contributions to our understanding of tipping in three ways. First, it brings together and organizes theory and research on tipping from a variety of loosely connected sources across several disciplines. Second, this review statistically combines the results of many studies to provide more accurate and generalizable tests of relationships than are provided by the individual studies alone. Finally, the review adds new data to the

published literature on tipping by: (a) making the results of numerous unpublished studies available for the first time, (b) re-analyzing data from several published studies to provide tests of relationships that were not reported by the original investigators, and (c) testing the effects of study characteristics on study outcomes.

## LITERATURE REVIEW

Rational choice theory portrays man as a purposive decision maker who maximizes utility under conditions of certainty and expected utility or subjective expected utility under conditions of risk and uncertainty (Edwards 1954). Utility is the perceived value of an outcome. Thus, from a rational choice perspective, tipping makes sense only if desired outcomes are contingent on how much is tipped (Lynn and Grassman 1990). Since tips are usually paid after services have been rendered, immediate service is clearly not contingent on tipping behavior and is not the desired outcome being purchased with tips. This is why many economists view tipping as anomalous behavior that challenges their assumptions about the rationality of economic man (Bodvarsson and Gibson 1987; Frank 1987). However, social approval/esteem, equitable relationships, future service and the well-being of servers are all potentially desirable outcomes that are contingent on tipping. Thus, tipping may be explained as a rational attempt to obtain these outcomes. These potential explanations for tipping and the potentially inhibiting effects on tipping of cost considerations are discussed in the paragraphs below.

### Social Approval and Esteem

Humans are social animals with deep-seated needs for the approval and esteem of their fellows (Baumeister and Tice, 1990; Hogan 1982). These needs may underlie tipping.

Researchers have argued that consumers leave tips to comply with social norms and expectations (Crespi 1947; Holloway 1985; Lynn and Grassman 1990), to reduce servers' envy of the customers' superior circumstances (Foster 1972; Lynn 1994), and to display wealth, status and power (Lynn 1997; May 1978; Paules 1991; Scott 1916; Shamir 1984). In other words, these researchers have argued that tipping is an attempt to buy the approval, goodwill and esteem of servers and fellow consumers.

Social approval is tied to compliance with social norms and expectations (Deutsch and Gerard 1955; Schacter 1951). In restaurant settings, consumers are expected to tip 15 to 20 percent of their bill amounts (Martin 1988). Thus, the social approval explanation for tipping suggests that consumers' tip amounts will be positively related to their bill sizes. Moreover, to the extent that consumers comply with the 15 to 20 percent tipping norm in order to obtain social approval, then the strength of the relationship between tip amount and bill size should vary with the value of the approval to be obtained. This means that bill size should be a stronger predictor of tip amounts for frequent patrons than for infrequent ones, because frequent patrons are more likely to encounter the server again and, therefore, to value his or her approval. It also means that bill size should be a stronger predictor of tip amounts at more expensive restaurants, because the social-status of servers and other diners is greater at more upscale restaurants and tippers should value the approval of high status sources more than that of low status sources.

**PROPOSITION 1:** Consumers will comply with the 15 to 20 percent tipping norm to the extent that they value their servers' approval.

**Hypothesis 1:** Tip amounts will be positively related to bill size.

**Hypothesis 2:** Bill size will be a stronger predictor of tip size for frequent patrons than for infrequent ones.

**Hypothesis 3:** Bill size will be a stronger predictor of tip size at expensive restaurants than at inexpensive ones.

Social esteem refers to status and liking. It can be obtained through conspicuous displays of wealth (Veblen 1965) and through the giving of generous gifts (Schwartz 1967). Tipping is a voluntary payment of money that allows consumers to demonstrate both wealth and generosity (Lynn 1997; Paules 1991; Shamir 1984). However, the value of such demonstrations should vary with the patronage frequency of the tipper as well as with the physical attractiveness and sex of the server. Frequent restaurant patrons should value a servers' esteem more than do infrequent patrons because frequent patrons are more likely to encounter the server again (Lynn and Grassman 1990). Restaurant patrons should also value the esteem of physically attractive servers more than that of less attractive servers because attractive people are themselves held in more esteem than are less attractive people (Patzner 1985). Finally, restaurant patrons may value the esteem of opposite sex servers more than that of same sex servers, because opposite sex servers will have greater sexual appeal to heterosexual restaurant patrons. Thus, the social esteem explanation for tipping suggests that restaurant tips will increase with the customers' patronage frequency and with the server's physical attractiveness. It also suggests that restaurant tips may be larger when the server's sex differs from the tipper's sex. This latter expectation further implies that: (a) male customers will tip more on average than female customers, because 81 percent of restaurant servers are female (Segrave 1998), and (b) female servers will receive larger tips on average

than male servers, because most tippers are male (Lynn and Latane 1984; Lynn and Mynier 1993).

**PROPOSITION 2:** Consumers will tip more to the extent that they value their servers' esteem.

**Hypothesis 4:** Frequent patrons will leave larger bill-adjusted tips than infrequent patrons.

**Hypothesis 5:** Attractive servers will receive larger bill-adjusted tips than less attractive servers.

**Hypothesis 6:** Servers will receive larger bill-adjusted tips from opposite-sex customers than from same-sex customers.

**Hypothesis 7:** Male consumers will leave larger bill-adjusted tips on average than female customers.

**Hypothesis 8:** Female servers will receive larger bill-adjusted tips on average than male servers.

### Equitable Relationships

People are taught to value fairness and equity in social relationships (Adams 1965; Walster, Bersherd and Walster 1973). A relationship involving the exchange of positive resources (as in most service encounters) is considered equitable when each of the participant's outcomes ( $O_a$  and  $O_b$ ) from the relationship are proportionate to their inputs ( $I_a$  and  $I_b$ ) – i.e., when  $O_a/I_a = O_b/I_b$ . Tips and services are resources that customers and servers respectively give to one another in social exchange relationships, so the desire for

equitable relationships may underlie consumers' tipping decisions. This possibility is consistent with economists' belief that tipping exists because it is the most efficient way to motivate servers to provide good service (Bodvarsson and Gibson 1994; Hemenway 1980; Jacob and Page 1980). If consumers do tip in order to buy equitable relationships with servers, then tip size should be positively related to the quality and quantity of service.

**PROPOSITION 3:** Consumers will tip more to the extent that they receive more or better service.

**Hypothesis 9:** Bill-adjusted tip size will be positively related to ratings of the quality of the service rendered.

**Hypothesis 10:** Bill-adjusted tip size will be positively related to the number of server trips to the table.

**Hypothesis 11:** Bill adjusted tip size will be positively related to the number of items/dishes the server brings to the table.

**Hypothesis 12:** Bill-adjusted tip size will be positively related to the number of courses the server delivers to the table.

**Hypothesis 13:** Bill-adjusted tip size will be greater when the server writes separate checks for the table than when the server writes only one check for the table.

### Future Service

People value future rewards, though at a discounted rate (Lea, Tarpy and Webley 1987). This means that for a restaurant's regular patrons, tipping could be an attempt to buy good service in the future. Regular patrons can ensure good future service by leaving tip

amounts that are contingent on service quality (Lynn and Grassman 1990). Servers who are aware of this contingency and who want to improve their tip incomes will then be motivated to deliver good service. This reasoning is similar to that underlying the tit-for-tat strategy in iterated prisoner's dilemma games (Axelrod 1984) and it suggests that the relationship between service and tipping should be stronger for regular than for non-regular customers.

**PROPOSITION 4:** Service quality will be a stronger determinant of tip size for frequent patrons of a restaurant than for infrequent patrons.

**Hypothesis 14:** Service ratings will predict bill-adjusted tip size more strongly for frequent patrons than for infrequent patrons.

**Hypothesis 15:** The number of server trips to the table will predict bill-adjusted tip size more strongly for frequent patrons than for infrequent patrons.

### Server Welfare

People often empathize with others in need and take great pains to help them (Hoffman 1981; Krebs 1975). Furthermore, researchers have found that empathy produces a genuinely altruistic concern for the well-being of others (Batson 1991). This raises the possibility that consumers tip in order to insure the well-being of their servers. Many servers receive minimal wages and depend upon tips as a major source of income (Schmidt 1985). Empathic consumers who are aware of this fact may tip in order to help servers obtain a livable income (Holloway 1985). This explanation for tipping suggests that tip amounts will be positively related to factors that enhance empathy and altruism.

One factor known to increase helping behavior is positive affect (Isen and Levin 1977) and two things that put people in a positive mood are sunshine (Cunningham 1979) and receiving small gifts of candy (Isen, Daubman and Nowicki 1987). This suggests that restaurant patrons will leave larger tips when the day is sunny or when they are given after-dinner mints than otherwise.

**PROPOSITION 5:** Consumers will tip more when they are in a positive mood than when they are not.

**Hypothesis 16:** Consumers will leave larger bill-adjusted tips on sunny days than on cloudy days.

**Hypothesis 17:** Consumers will leave larger bill-adjusted tips when given after-dinner candies than when not given candy.

Another factor that increases empathy and helping is interpersonal liking/rapport (Bartal 1976). Servers can increase their rapport with customers by giving their names to customers, touching customers, and squatting down next to customers' tables (Lynn 1996; Lynn and Mynier 1993). Thus, an altruistic explanation for tipping suggests that tip size will be positively affected by all of these server behaviors. Rapport is also affected by interpersonal similarity (Byrne 1971). Since over 85 percent of waiters and waitresses are white (Seagrave 1998), the rapport enhancing effects of similarity suggest that white customers will leave larger tips on average than will non-white customers (see Myers 1990, p. 466, for further support of this hypothesis).

**PROPOSITION 6:** Consumers will tip more when they feel some personal rapport with the server than when they do not.

**Hypothesis 18:** Consumers will leave larger bill-adjusted tips when the server reveals his/her name than when the server does not reveal his/her name.

**Hypothesis 19:** Consumers will leave larger bill-adjusted tips when the server touches them than when the server does not touch them.

**Hypotheses 20:** Consumers will leave larger bill-adjusted tips when the server squats next to the table than when the server remains standing throughout the service encounter.

**Hypothesis 21:** White consumers will leave larger bill-adjusted tips on average than non-white consumers.

### Cost Reduction

Consumers generally try to pay as little as possible for goods and services (Lynn 1990b). Thus, a desire to reduce the costs of eating out should oppose the previously considered motivations for tipping. This expectation suggests that factors associated with the salience and strength of cost concerns will affect consumers' decisions about how much to tip. Payment method (cash vs. credit), the presence of credit card stimuli, evaluations of restaurant prices, alcohol consumption, and bill size should all affect the salience and strength of cost concerns, so they should affect tip amounts in ways described below.

The use of credit cards should decrease consumers' concerns with costs, because credit cards allow consumers to postpone the payment for goods and services and they increase consumers' spending powers. Interestingly, research has found that the mere

presence of credit card logos is enough to produce these effects (Feinberg 1986). These considerations and findings suggest that the use of credit cards and the presence of credit card logos should increase tip size.

Consumers' evaluations of a restaurant's prices are also likely to affect their concerns about the cost of the dining experience. When consumers perceive a restaurant's prices as reasonable, they should be less concerned about reducing the cost of eating at that restaurant than when they consider the restaurant's prices as too high. Thus, tip amounts should be positively related to consumers' evaluations of a restaurant's prices.

Alcohol consumption may also decrease consumers' concerns about the cost of tipping, because it reduces people's ability to process information (Steele and Joseph 1990). Alcohol induced myopia tends to make behavior more extreme in situations characterized by strong cues both instigating and inhibiting the behavior. Intoxicated people who process the instigating cues in such situations lack the capacity to also process the inhibitory cues, so their behavior tends to be more extreme than the behavior of non-intoxicated people in the same situation (Steele and Southwick 1985). If consumers experience strong desires to save money that conflict with social pressures to tip, then alcohol consumption should weaken the consumers' inhibitory considerations of costs and should increase tip size.

Finally, bill size should affect consumers' concerns about the cost of tipping, because the cost of complying with the 15 to 20 percent tipping norms goes up with bill size. Consumers may respond to these concerns by leaving smaller percentage tips when they run-up larger bills (Elman 1976). This would mean that dollar tip amounts increase at a marginally decreasing rate as bill size increases. Such an effect would produce a negative

quadratic trend as well as a positive linear trend in the relationship between dollar tip amounts and bill size.

**PROPOSITION 7:** Consumers will leave larger tips when the financial costs of tipping are less salient than when those costs are more salient.

**Hypothesis 22:** Consumers will leave larger bill-adjusted tips when paying with credit cards than when paying with cash.

**Hypothesis 23:** Consumers will leave larger bill-adjusted tips when the bill is presented on a tip tray embossed with credit card logos than when the bill is presented on a plain tip tray.

**Hypothesis 24:** Consumers will leave larger bill-adjusted tips to the extent that they rate the restaurant's prices positively.

**Hypothesis 25:** Consumers will leave larger bill-adjusted tips when they have consumed alcohol than when they have not consumed alcohol.

**Hypothesis 26:** Tip size will increase with bill size at a marginally decreasing rate.

## METHOD

### Domain of the Review

We limited this review to research on the correlates and determinants of tip size in restaurant settings. Studies examining the correlates of tip amounts left to cocktail waitresses (Faber 1982; Tidd and Lockard 1978), hotel bellmen (Rind 1996a) pizza delivery drivers (Seligman, et. al. 1985) and taxicab drivers (Karen 1962; Nida, Jackson and Latane 1980)

were excluded, because tipping norms and behaviors differ from one service profession to another and because there were not enough of these studies to make meaningful comparisons of tipping across service professions.

We also limited this review to research providing data about individual service encounters that came from one or more of three sources: (1) restaurant checks, charge receipts and comment cards, (2) records kept each evening by restaurant servers, and/or (3) interviews with restaurant patrons as they departed the restaurant. A few studies of restaurant tipping using other methods or units of analysis were excluded because they were not methodologically comparable to the included studies (e.g., Davis, et. al. 1998; Fitzsimmons and Maurer 1991; Harris 1995; Lynn and Simons 1998; McCarty, et. al. 1990; McCrohan and Pearl 1991). Finally, one very large unpublished data set collected by one of the authors from exit interviews at over 30 different restaurants was excluded to avoid having it dominate the results of the meta-analysis.

Identification of Studies

Published and unpublished studies falling within the domain of this review were identified in several ways. First, computerized searches of ABI Inform, ERIC, Dissertation Abstracts, Psych Abstracts and the Cornell Hospitality Database were conducted. Second, the references of already identified studies were examined for citations of prior studies. Finally, the authors of the published studies were contacted and asked for any additional studies they had conducted. This search strategy turned up 22 published and 14 unpublished studies that were included in the meta-analysis (see Table 1).

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 Insert Table 1 about here

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### Re-analysis of Study-Level Data

We were able to obtain the raw data from 15 of 22 published studies and 10 of 14 unpublished studies by contacting the authors of existing research articles on tipping. These 25 studies represent 69% of the studies and about 85% of the effects included in our meta-analysis. We reanalyzed the raw data from these studies in order to maximize the comparability of analyses and effects across studies as well as to provide tests of relationships that were not reported by the original investigators.

In these re-analysis, the linear effect of bill size was assessed in a simple linear regression using dollar tip amount as the dependent measure. Each of the other main effects was assessed in a separate multiple regression that used dollar tip amount as the dependent measure and that statistically controlled for the linear effect of bill size. Study level interaction effects were assessed by entering cross-product terms into a multiple regression that statistically controlled for the linear effect of bill size and for the main effects of the variables involved in the interaction. For multiple restaurant studies, separate analyses were conducted on the data from each restaurant.

### Calculation of Effect Sizes and z-Scores

We meta-analyzed the relationships of tip size to bill size and of bill-adjusted tip size to twenty-three other predictors from the tipping literature (see Table 2). For each of the effects included in this meta-analysis, we calculated two statistics – a correlation coefficient  $r$  that reflects the size of the effect and a z-score that reflects the statistical significance of the effect. These effect sizes and z-scores were calculated using formulas specified in Mullen (1989) and Rosenthal (1991). The information used in these calculations was obtained from

our re-analysis or from the original study reports depending on the availability of the raw data. Separate effect sizes and z-scores were calculated using the data from each restaurant in multiple restaurant studies. The only exception was a study by Crusco and Wetzel (1984) that combined data across two restaurants – only one set of effect sizes and z-scores was calculated for this study.

### Coding of Study Characteristics

This meta-analysis used fifty-four sources of data – counting each restaurant in each study as a separate source. Two characteristics of each source of data – the sex of the server and the expensiveness of the restaurant – were coded as potential moderators of tipping effect sizes. The information used to make these coding decisions came from articles and papers reporting the studies and from other information supplied by the studies' investigators.

Sex of the server. The sex of the server or servers in each source of data was coded as being either male or female. In cases where the servers' sexes were mixed or unknown, this characteristic was coded as a missing value. This study characteristic was coded by each of the authors, who agreed on 52 of the 54 sex-of-server coding decisions. The two coding disagreements were easily resolved upon discussion.

Restaurant expensiveness. The expensiveness of each restaurant was assessed (where possible) by obtaining the average per-person bill size at the restaurant and adjusting this figure for inflation using the Consumer Index for Food Prices (Statistical Abstracts of the United States 1996). In the vast majority of cases, the average per-person bill size was obtained from our re-analyses rather than from the original study reports. Therefore, only the senior author coded this characteristic. To make the inflation adjustments, we had to know when the data were collected. In a few cases, the year of data collection was not obtainable

from written reports or from authors. In those cases, we assumed the data was collected two years prior to the publication date of journal articles, one year prior to the completion date of master’s theses, and the same year as the composition of unpublished manuscripts.<sup>1</sup>

## RESULTS AN DISCUSSION

The effect sizes and z-scores in this meta-analysis were analyzed using Mullen’s (1989) software program, “Advanced Basic Meta-Analysis,” which facilitates the use of procedures and formulas that are explained and advocated by Rosenthal (1991). Our findings are summarized in Tables 2 through 4 and are discussed in the paragraph below.

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 Insert Tables 2-4 about here  
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### Social Approval

Academics and consumers alike have expressed the belief that people tip because it is expected and because violating those expectations risks social disapproval (Crespi 1947; Lynn and Grassman 1990). The results of this meta-analysis support that belief. Consistent with the 15 to 20 percent tipping norms, we found that tip amounts were positively related to bill size (Hypothesis 1:  $\bar{r} = .83$ ;  $z = 70.99$ ,  $p < .001$ ,  $n = 45$ ). In fact, bill size was the single best predictor of tip amounts – accounting for twice as much variability on average (mean  $r^2 = .70$ ) as all other factors combined! Moreover, this relationship was stronger under conditions likely to enhance concern with the server’s approval. Specifically, bill size was a stronger predictor of tip size for more frequent patrons (Hypothesis 2:  $\bar{r} = .11$ ;  $z = 4.92$ ,  $p <$

.001;  $n = 21$ ) and at more expensive restaurants (Hypothesis 3:  $r = .39$ ;  $z$  contrast = 11.21,  $p < .001$ ;  $n = 41$ ; see Table 4).

### Social Esteem

Tipping may also be attributed to a desire for the respect and liking of servers. Consistent with this possibility, we found that consumers tipped more under conditions likely to enhance the value of a servers' esteem. Specifically, consumers left larger bill-adjusted tips when they were frequent patrons of a restaurant (Hypotheses 4:  $\bar{r} = .09$ ;  $z = 4.68$ ,  $p < .001$ ;  $n = 26$ ) and when their servers were physically attractive (Hypothesis 5:  $\bar{r} = .20$ ;  $z = 3.73$ ,  $p < .001$ ;  $n = 2$ ).<sup>2,3</sup> In addition, men tipped more than women when the servers were female, but tipped less than women when the servers were male (Hypothesis 6:  $\bar{r} = .16$  vs.  $-.07$ ;  $z$  – contrast = 3.84,  $p < .001$ ; see Table 3).<sup>4</sup>

Since most restaurant servers are female and most tippers are male, we expected men to leave larger average tips than women and we expected waitresses to receive larger average tips than waiters. Consistent with the first of these expectations, we found that the average bill-adjusted tips left by men were larger than those left by women (Hypothesis 7:  $\bar{r} = .06$ ;  $z = 2.30$ ,  $p < .05$ ;  $n = 18$ ).<sup>5</sup> However, waitresses did not receive larger average bill-adjusted tips than waiters (Hypothesis 8:  $\bar{r} = .02$ ;  $z = .46$ , n.s.;  $n = 5$ ).<sup>6</sup> This failure to support Hypothesis 8 may be due to a weakness in its underlying assumption. We were able to identify the sex of the tipper in four of the studies testing sex-of-server effects. Although male tippers outnumbered female tippers in all those studies, male tippers made up less than 60 percent of the sample in two of the four studies. Thus, the preponderance of male tippers may not have been large enough to produce reliable sex-of-server effects.

### Equitable Relations

Tips are supposed to be an equitable reward for services rendered (Lynn and Grassman 1990; Lynn and Graves 1996; Snyder 1976). Consistent with this motive for tipping, bill-adjusted tips increased with evaluations of service quality (Hypothesis 9:  $\bar{r} = .12$ ;  $z = 5.58$ ,  $p < .001$ ;  $n = 26$ ), the number of server trips to the table (Hypothesis 10:  $\bar{r} = .10$ ;  $z = 2.52$ ,  $p < .02$ ,  $n = 6$ ), and the number of items servers delivered to the table (Hypothesis 11:  $\bar{r} = .08$ ;  $z = 2.71$ ,  $p < .01$ ;  $n = 13$ ).<sup>7</sup> However, bill-adjusted tips were not related to the number of courses served (Hypothesis 12:  $\bar{r} = .00$ ;  $z = .24$ , n.s.;  $n = 19$ ) or to whether or not the server wrote separate checks for different members of the dining party (Hypothesis 13:  $\bar{r} = .00$ ;  $z = .12$ , n.s.;  $n = 9$ ).<sup>8</sup> Although it is difficult to explain the failure to support all the hypothesis, the most parsimonious explanation for the three hypotheses that were supported is that consumers intentionally rewarded more and better service with larger tips.<sup>9</sup>

### Future Service

Game theory suggests that regular customers at a restaurant can ensure good future service by leaving tip amounts that are contingent on service quality (Axelrod 1984; Lynn and Grassman 1990). However, this meta-analysis provided little evidence that regular customers use this strategy. A predicted interaction between patronage frequency and the number of server trips to the table was confirmed (Hypothesis 15:  $\bar{r} = .11$ ;  $z = 2.40$ ,  $p < .02$ ;  $n = 4$ ), but this meta-analytic result was caused by a single study involving a single server at one restaurant and does not appear to be robust (without that one study:  $\bar{r} = .03$ ;  $z = .64$ , n.s.). Moreover, an interaction between patronage frequency and service evaluations was non-significant (Hypothesis 14:  $\bar{r} = .01$ ;  $z = -.11$ , n.s.;  $n = 14$ ). With a total sample of 1,317

dining parties from 14 different restaurants, it is difficult to attribute this null result to a lack of statistical power or to unusual characteristics of the studies' settings. Thus, it appears that tippers are either poor game theorists or unmotivated by considerations of future service.

### Server Welfare

Tipping may be an altruistic act designed to help servers earn a livable income (Holloway 1985). Our meta-analysis results were consistent with this possibility. Consumers left larger bill-adjusted tips under conditions known to elevate mood and increase helping – when the weather was sunny (Hypothesis 16:  $\bar{r} = .20$ ;  $z = 3.05$ ,  $p < .01$ ;  $n = 2$ ) and when the consumers received gifts of candy (Hypothesis 17:  $\bar{r} = .21$ ;  $z = 3.35$ ,  $p < .01$ ;  $n = 3$ ).<sup>10</sup> Furthermore, consumers left larger bill-adjusted tips under conditions likely to enhance their rapport and empathy with servers – when servers gave their names to customers (Hypothesis 18:  $\bar{r} = .23$ ;  $z = 2.20$ ,  $p < .04$ ;  $n = 3$ ), touched their customers (Hypothesis 19:  $\bar{r} = .27$ ;  $z = 5.97$ ,  $p < .001$ ;  $n = 4$ ), and squatted next to their customers' tables (Hypothesis 20:  $\bar{r} = .39$ ;  $z = 8.26$ ,  $p < .001$ ;  $n = 2$ ) as well as when the customers were the same race as the vast majority of servers (Hypothesis 21:  $\bar{r} = .21$ ;  $z = 4.99$ ,  $p < .001$ ;  $n = 7$ )<sup>11</sup>. Mood and rapport effects on tipping are not conclusive evidence for altruistic motives, but they are linked to altruism in the existing literature.

### Costs

Rational choice models suggest that tipping is constrained by the costs or sacrifices involved (Frank 1987). If cost considerations inhibit tipping, then tip amounts should be affected by variables that increase or decrease the salience of these considerations – variables such as payment method (cash vs. credit), the presence of credit card cues, and evaluations of restaurant prices, alcohol consumption, and bill size. Our meta-analysis provided qualified

support for these expectations. Consumers did leave larger bill-adjusted tips when paying with credit (Hypothesis 22:  $\bar{r} = .12$ ;  $z = 5.11$ ,  $p < .001$ ;  $n = 16$ ), receiving the bill on a tip tray containing credit card logos (Hypothesis 23:  $\bar{r} = .29$ ;  $z = 2.79$ ,  $p < .006$ ;  $n = 2$ ), and evaluating the restaurant's prices favorably (Hypothesis 24:  $\bar{r} = .18$ ;  $z = 3.81$ ,  $p < .001$ ;  $n = 7$ ).<sup>12</sup> These effects are consistent with our expectations that each variable would reduce the salience of tipping's costs.

Alcohol consumption was not related to bill-adjusted tips (Hypothesis 25:  $\bar{r} = .03$ ;  $z = 1.47$ , n.s.;  $n = 19$ ), but the alcohol effects in the literature were significantly heterogeneous ( $\chi^2(18) = 34.79$ ,  $p < .02$ ). Analyses of moderators indicated that alcohol consumption increased bill-adjusted tips when the server was male but not female ( $\bar{r} = .22$ ,  $vs = -.02$ ;  $z$  contrast =  $3.90$ ,  $p < .001$ ;  $n = 5$  vs.  $6$ ; see Table 3). Alcohol affects behavior more strongly the greater the inhibitory conflict over the behavior (Steele and Josephs 1990), so these findings suggest that tippers may be more cost conscious when tipping males than when tipping females.

Finally, tip size increased with bill size at a marginally increasing rate rather than at the marginally decreasing rate we hypothesized (Hypothesis 26:  $\bar{r} = .05$ ;  $z = 3.27$ ,  $p < .001$ ;  $n = 38$ ). This positive quadratic effect may be attributable to individual differences in cost consciousness – those consumers with little concern for costs may run up larger bills and leave more generous tips than do more cost conscious consumers. Consistent with this interpretation, we found that the positive quadratic effect of bill size was stronger at more expensive restaurants ( $r = .43$ ;  $z = 5.59$ ,  $p < .001$ ; see Table 4). Taken together the tests of Hypotheses 22 through 26 suggest that cost concerns inhibit tipping, but that such concerns are not universal.

### Alternative Explanations

Several of the relationships observed in this meta-analysis have more than one plausible explanation. Although not alone in this regard, four relationships stand out as having particularly plausible rival explanations. First, frequent patrons of a restaurant may tip more than infrequent patrons, because frequent patrons value the server's approval more than infrequent patrons or because frequent patrons like the restaurant's atmosphere, food, service and prices more than infrequent patrons. Second, tip size may be related to service ratings, because evaluations of service quality drive tipping decisions or because the customer's mood drives both evaluations of service quality and tipping decisions. Third, receiving free after-dinner mints may increase tip size, because the candies elevate customers' moods or because the candies obligate customers to reciprocate in some way. Fourth, white consumers may tip more than non-white consumers, because white consumers identify/empathize with a largely white waitstaff more than non-white consumers or because white consumers receive better service from servers (who expect non-white customers to be poor tippers) than do non-white consumers. Our review of the literature does not allow us to definitively rule out these and other alternative explanations for *specific* relationships between tip size and its predictors. When considered together, however, the observed relationships form patterns that are most plausibly and parsimoniously explained in terms of the propositions outlined in the introduction. Thus, the *collective* results of this meta-analysis provide support for our propositions (except Proposition 4) even though additional research is needed to rule out alternative explanations for several *specific* relationships.

## CONCLUSIONS

This meta-analysis brought together published and unpublished studies from several disciplines to assess the reliability, strength and generalizability of various predictors of restaurant tip amounts. The results of the meta-analysis indicated that bill size was the single largest predictor of tip size in restaurant settings – accounting for twice as much variability as all other factors combined! The next largest predictors of tip size were variables associated with server attractiveness, server friendliness, and customer mood. Variables related to service quality, server effort, and cost consciousness were reliable, but weak predictors of tip size. Patronage frequency, sex-of-server, and restaurant expensiveness moderated some of the observed relationships between tip size and its predictors. These findings implicate a variety of cognitive and motivational processes as described in the “Literature Review” and the “Results and Discussion” sections. In addition, they have several methodological and practical implications that are considered below.

### Methodological Implications

Academic researchers have used tipping as a way of testing theories about more general phenomena in a naturalistic context. For example, tip size has been used as a measure of interpersonal liking (Hornik 1992), social influence (Freeman, et. al. 1973) and consumer satisfaction (Fitzsimmons and Mauer 1991). The results of our meta-analysis provide evidence about the appropriateness of these uses and interpretations of tip size. Specifically, the effects on tipping of several variables known to increase interpersonal rapport and liking – i.e., physical attractiveness, physical proximity (squatting next to the table), interpersonal touching, and knowing someone’s name – suggest that tip size is a valid measure of rapport and liking. In addition, the effects of bill size, along with its interactions

with patronage frequency and restaurant expensiveness, support the use of tip size as a measure of social influence. On the other hand, the fact that tip size was very weakly related to evaluations of service quality suggests that tip size is a poor measure of consumer satisfaction with service. Future researchers should keep these findings in mind when considering the use of tip size as a measure of these constructs.

### Practical Implications

Approximately 3 million waiters and waitresses in the United States rely upon tips as a major source of income (Schmidt 1985; Statistical Abstracts of the United States 1996). The results of our meta-analysis suggest that servers interested in increasing this income should focus more on raising their customers' bill sizes, elevating their customers' moods and establishing rapport with their customers than on delivering attentive and technically correct service. More specifically, our review suggests that servers can increase their tips by: (1) selling more food and drink (especially alcohol for waiters), (2) giving their names to customers, (3) squatting next to their customers' tables, (4) touching their customers, (5) giving after-dinner mints to their customers, (6) encouraging their customers to pay with credit cards, and (7) using tip trays embossed with credit card logos.

The results of our meta-analysis also have implications for restaurant managers. First, the weak relationship we found between tip amounts and service evaluations suggests that managers should probably not rely upon tips alone to motivate servers (see Lynn and Graves 1996). According to economists, tipping exists because services are difficult for managers to monitor and reward, but relatively easy for customers to monitor and reward (Bodvarsson & Gibson 1994; Hemenway 1984; Jacob and Page 1980). Difficult or not, managers may need to assume a larger, more active role in monitoring and rewarding the

efforts of their service employees. Managers could supplement a tipping-based incentive/reward system by directly observing servers' work, by hiring mystery customers to evaluate servers, and/or by soliciting verbal feedback from regular customers.

Second, our meta-analytic results suggest a number of ways that managers can help their servers earn larger tips, which should increase employee morale and reduce turnover (Lynn 1996). We have already discussed techniques that servers can use to increase their own tips. Managers should encourage and facilitate their servers' use of these techniques by providing training in suggestive selling and rapport building, by supplying servers with after-dinner mints for customers, and by supplying servers with tip trays that display credit card logos. In addition, managers can increase their servers' tips by making optimal assignments of servers to customers. Specifically, our findings suggest that managers should assign servers to wait on members of the opposite sex whenever possible.

#### Directions for Future Research

Tipping is a behavior we all engage in as consumers, but rarely think about as researchers. As this review demonstrates, however, tipping is a potentially fruitful area of inquiry for consumer researchers. Investigations into an area in which consumers voluntarily add to the costs of service promise to enrich both theory and practice. By bringing together and organizing existing work on this topic, our review can help to guide future investigations. In particular, our review points to two issues that need to be addressed. First, there are no studies relating tip size to direct measures of the tippers' motivational states or dispositions. Such studies are needed to provide more definitive assessments of the motivations underlying tipping. Second, there are very few tests of interactions in the tipping literature. More tests for interactions are needed to explain the heterogeneity in effect-sizes observed for 9 of

21 main-effect predictors in our meta-analysis. Tests for interactions would also help assess rival explanations for some of the relationships observed between tip size and its predictors. As researchers address these issues, and as research findings continue to build in this area, we will gain deeper insights into the cognitive and motivational processes underlying tipping. The larger picture to emerge from this body of work is likely to integrate a collage of theoretical viewpoints and to enhance our general understanding of consumer behavior.

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## ENDNOTES

<sup>1</sup>In order to keep one outlying value of restaurant expensiveness from biasing our analyses of moderators, we re-coded Lynn and Mongan's (1996) inflation-adjusted, average, per-person bill size to \$16.50 from its original value of \$24.90. This re-coding eliminated the outlying value while preserving the ordinal position of the restaurant on the expensiveness dimension.

<sup>2</sup>The effects of patronage frequency on tipping do not appear to generalize to taxicabs. Karen (1962) found that regular customers were less likely to tip cab drivers than were non-regular customers.

<sup>3</sup>Lynn and Simon (1998) partially replicated the server attractiveness affect in a study using servers as the units of analysis. They found that attractive waitresses received larger average charge tips than did less attractive waitresses. However, this effect was observed only for evening shifts. In addition, attractiveness had no effect on the average charge tips of waiters in this study.

<sup>4</sup>Four studies in the meta-analysis included measures of both the servers' and the customers' sexes. The sex-of-server by sex-of-customer interactions in these studies had an average effect size  $r$  of .06 and a combined  $z$  score of 1.19 (one-tailed  $p < .12$ ). Although not significant, the combined interaction was in the hypothesized direction. This analysis was not used to test Hypothesis 6, because modest samples combined with unequal cell sizes meant that the statistical power of these study-level interactions was low. The reported between-study analysis involved more subjects and greater statistical power.

<sup>5</sup>Tidd and Lockard (1978) found a similar effect in cocktail lounges. Men tipped cocktail waitresses more than did women, but only when the waitresses flashed a large smile at her customers. Complicating matters is a sex difference in tipping taxicab drivers. Karen (1962) found that men were more likely to tip a male taxicab driver than were women. While superficially similar to the sex difference in restaurant tipping, Karen's finding is inconsistent with the sex-of-customer by sex-of-server interaction found in restaurants.

<sup>6</sup>One study finding a strong sex-of-server effect consistent with Hypothesis 8 was excluded from this analysis, because each sex was represented by only one server in that study. Consistent with the null effect reported in the main body of the current paper, Lynn and Simons (1998) found no sex-of-server effect on tipping in a restaurant study using servers as the units of analysis. However, Davis, et. al., (1998) found that waitresses received larger tips than did waiters in a study using server work days as the units of analysis. Clearly, this is an issue that needs more research attention.

<sup>7</sup>Tipping service relationships have also been observed at the server and restaurant levels of analysis. Lynn and Simons (1998) found that servers who rated their service abilities highly received larger average evening charge tips than did servers who rated their service abilities less highly. Fitzsimmons and Mauer (1991) found that percentage tips were larger at restaurants providing more attentive service than at restaurants providing less attentive service.

<sup>8</sup>The service-tipping relationship does not appear to generalize to taxicabs. Karen (1962) found that taxicab customers were no more likely to tip the cab driver when he provided special services than when he did not.

<sup>9</sup>Equity motives can also explain Seligman, et. al.'s (1985) finding that pizza delivery drivers received larger tips for faster deliveries only when customers were lead to attribute delivery time to the driver's efforts.

<sup>10</sup>The effects of sunshine on tipping appear quite robust. Rind (1996) found that simply telling customers that the weather was sunny increased the tips given to a hotel bellperson.

<sup>11</sup>Davis et. al. (1998) replicated the effects of squatting in a multi-restaurant study that used server workdays as the units of analysis.

<sup>12</sup>Large scale consumer diary studies have also found that consumers tip more when paying with credit (Pearl 1985).

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**TABLE 1: DESCRIPTIONS OF TIPPING STUDIES**

Citation	Source	Yr. of data collection	Data available?	Method	Server's sex	Name of restaurant	Location of restaurant	Ave. per-person bill size <sup>c</sup>	Meal	Sample size
Baune (1992)	Unpub.	----	No	Exit Interviews & Server Records	mixed/unknown	Waldo's Pizza	St. Cloud, MN	---	Dinner	94
Bodvarsson & Gibson (1994)	Journal	1991	Yes	Exit Interviews	mixed/unknown	Embers	St. Paul, MN	3.82	Other	98
						Chi-Chi's	St. Paul, MN	6.79	Other	99
						Baker's Sq.	St. Cloud, MN	5.16	Other	100
						Alvies	St. Cloud, MN	2.27	Other	100
						Red Lobster	St. Cloud, MN	12.36	Other	100
						Pirates Cove	St. Cloud, MN	15.39	Dinner	100
Persian	St. Cloud, MN	11.45	Dinner	100						
Crusco & Wetzel (1984)	Journal	1984	No	Server Records & Customer Survey	All Female	---	Oxford, MS	---	Other	114
Cunningham (1979)	Journal	1978	No	Server Records	All Female	---	Chicago, IL	---	Other	130
Feinberg (1986)	Journal	----	No	Server Records	mixed/unknown	---	West Lafayette, IN	---	Other	135
Fisher (1992)	Unpub.	1992	Yes	Server Records	Male	Simeons	Ithaca, NY	---	Dinner	92
Freeman, et. al. (1975)	Journal	1973	No	Server Records	mixed/unknown	Steak & Ale	Columbus, OH	14.42	Dinner	396
Garrity & Degelman (1990)	Journal	1988	Yes	Server Records	Female	Charley Brown's	Huntington Beach, CA	9.82	Other	42
Hornik (1992)	Journal	----	No	Server Records & Customer Survey	mixed/unknown	---	---	---	Dinner	248
Kilkelly (1992)	Unpub.	1992	No	Exit Interviews	mixed/unknown	Perkins	Sauk Rapids, MN	4.19	Other	100
Lynn (1988)	Journal	1984	Yes	Server Records	Male	Mother's	Columbus, OH	6.21	Other	207

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Citation	Source	Yr. of data collection	Data available?	Method	Server's sex	Name of restaurant	Location of restaurant	Ave. per-person bill size <sup>c</sup>	Meal	Sample size	
Lynn (1989)	Unpub.	1989	Yes	Exit Interviews	mixed/ unknown	Bobby Bufford's	Columbia, MO	8.78	Dinner	63	
						Garcia's	Columbia, MO	6.89	Dinner	63	
						Denny's	Columbia, MO	5.00	Dinner	39	
Lynn (1990)	Unpub.	1990	Yes	Server Records	Female	Houston's	Houston, TX	9.52	Dinner	91	
						Female	On the Border	Houston, TX	7.23	Dinner	113
						Female	Park Place	Houston, TX	11.61	Dinner	100
						Male	Shang Hai	Houston, TX	7.58	Dinner	97
						Male	Eric's	Houston, TX	6.58	Dinner	44
						Male	Deerfield's	Houston, TX	10.94	Dinner	134
Lynn & Grassman (1990)	Journal	1988	Yes	Exit Interviews	mixed/ unknown	Red Lobster	Columbia, MO	11.65	Dinner	103	
Lynn & Graves (1996: Study 1)	Journal	1990	Yes	Exit Interviews	mixed/ unknown	Bennigan's	Houston, TX	6.77	Dinner	109	
						Olive Gardens	Houston, TX	8.32	Dinner	69	
Lynn & Graves (1996: Study 2)	Journal	1988	Yes	Server Records	Female	Red Lobster <sup>b</sup>	Columbia, MO	11.25	Dinner	175	
Lynn & Latane (1984: Study 1)	Journal	1980	Yes	Exit Interviews	Female	I.H.O.P.	Columbus, OH	3.55	Other	169	
Lynn & Latane (1984: Study 2)	Journal	---	Yes	Server Records	mixed/ unknown	Smuggler's Inn	Columbus, OH	13.34	Dinner	206	
Lynn, Le & Sherwyn (1998)	Journal.	1995	Yes	Server Records	Male	Bennigan's	Houston, TX	6.06	Other	105	
Lynn & Lynn (1990)	Unpub.	1984	Yes	Server Records	Female	Jimmy Dean's	Columbus, OH	3.59	Dinner	248	
Lynn & Mongan (1996)	Unpub.	1996	Yes	Server Records	Female	John Thomas' Steak House	Ithaca, NY	24.90	Dinner	73	
Lynn & Mynier (1993: Study 1)	Journal	1991	Yes	Server Records	Male	Cyclone's Anaya's	Houston, TX	---	Other	270	
Lynn & Mynier (1993): Study 2)	Journal	1992	Yes	Server Records	Female	(Chinese)	Houston, TX	5.93	Dinner	148	

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Citation	Source	Yr. of data collection	Data available?	Method	Server's sex	Name of restaurant	Location of restaurant	Ave. per-person bill size <sup>c</sup>	Meal	Sample size
Lynn & Petrick (1996)	Unpub.	1996	Yes	Restaurant Records & Customer Survey	mixed/unknown	Coyote Loco	Ithaca, NY	9.76	Dinner	147
Lynn & Strong (1992)	Unpub.	1992	Yes	Server Records	Male	Anti Pasto	Houston, TX	6.72	Other	200
May (1978)	Thesis	----	No	Server/Restaurant Records & Observers	All Female	(Steak & Lobster)	Chicago, IL	16.21	Dinner	600
McCall & Belmont (1996: Study 1)	Journal	1994	Yes	Server Records	mixed/unknown	---	Turin, NY	4.71	Other	79
McCall & Belmont (1996: Study 2)	Journal	1994	Yes	Server Records	mixed/unknown	(cafe)	Ithaca, NY	4.88	Other	27
Olia (1991)	Unpub.	----	No	Exit Interviews	mixed/unknown	Alvies <sup>a</sup>	St. Cloud, MN	2.27	Other	50
						LaCasita	St. Cloud, MN	---	Other	50
						Red Lobster <sup>a</sup>	St. Cloud, MN	12.36	Other	50
						Ember's <sup>a</sup>	St. Cloud, MN	3.82	Other	50
Rind (1996)	Unpub.	1996	Yes	Server Records	mixed/unknown	---	Philadelphia, PA	5.93	Other	213
Rind & Bordia (1995)	Journal	1992	Yes	Server Records	Female	White Dog Cafe	Philadelphia, PA	9.09	Other	137
Rind & Bordia (1996)	Journal	1994	Yes	Server Records	mixed/female	Saladally	Philadelphia, PA.	5.26	Other	89
Rind & Lynn (1996)	Unpub.	1996	Yes	Server Records	Female	---	Philadelphia, PA	3.34	Other	98
Rind & Strohmets (1997)	Unpub.	1997	Yes	Server Records	Female	---	Monmouth, NJ	8.58	Dinner	81
Stephen & Zweigenhaft (1986)	Journal	----	No	Server Records	Female	---	Greensboro, SC	---	Other	112
Stillman & Hensley(1980)	Journal	----	No	Server Records	All Female	---	---	14.17	Dinner	376

<sup>a</sup> same restaurants as in Bodvasson and Gibson (1994)

<sup>b</sup> same restaurant as in Lynn and Grassman (1990)

<sup>c</sup> in 1982-1984 dollars

TABLE 2

## SUMMARY OF META-ANALYTIC COMBINATIONS AND DIFFUSE COMPARISONS

Hypothesis: Variable	No. of effects	No. of subjects	Mean $r^a$	Combined $z$	Fail-safe $n$	Diffuse comparison of effect sizes
<u>Proposition 1: Social Approval</u>						
H1: Bill Size	45	5,016	.83	70.99	83,769.34	$\chi^2(44)=1250.38, p<.0001$
H2: PF x Bill	21	2,102	.11	4.92	166.55	$\chi^2(20)=48.14, p<.001$
<u>Proposition 2: Social Esteem</u>						
H4: Patronage Freq (PF)	26	2,446	.09	4.68	184.72	$\chi^2(25)=32.55, n.s.$
H5: Server Attractiveness	2	412	.20	3.73	8.28	-----
H7: Customer's Sex (M>F)	18	1,839	.06	2.30	17.19	$\chi^2(17)=37.85, p<.002$
H8: Server's Sex (F>M)	6	810	.10	2.18	4.52	$\chi^2(5)=18.80, p<.001$
<u>Proposition 3: Equity</u>						
H9: Service Quality	26	2,668	.12	5.58	273.10	$\chi^2(25)=31.01, n.s.$
H10: No. Trips to Table	6	614	.10	2.52	8.12	$\chi^2(5)=13.24, p<.03$
H11: No. Items Served	13	1,090	.08	2.71	22.17	$\chi^2(12)=25.46, p<.02$
H12: No. Courses Served	19	1,794	-.00	-.24	---	$\chi^2(18)=24.55, n.s.$
H13: Separate Checks	9	1,045	-.00	-.12	---	$\chi^2(8)=12.37, n.s.$
<u>Proposition 4: Future Service</u>						
H14: PF x Service Quality	14	1,317	-.01	-.11	---	$\chi^2(13)=14.43, n.s.$
H15: PF x No. of Trips	4	311	.11	2.40	4.50	$\chi^2(3)=8.52, p<.04$
<u>Proposition 5: Positive Mood</u>						
H16: Sunshine	2	244	.20	3.05	4.85	-----
H17: After Dinner Mints <sup>b</sup>	3	240	.21	3.35	9.42	$\chi^2(2)=4.37, n.s.$
<u>Proposition 6: Rapport</u>						
H18: Giving Name to Customer <sup>b</sup>	3	275	.23	2.20	2.38	$\chi^2(2)=18.62, p<.0001$
H19: Touching Customer <sup>b</sup>	4	579	.27	5.97	48.65	$\chi^2(3)=5.70, n.s.$
H20: Squatting Next to Table <sup>b</sup>	2	418	.39	8.26	48.41	-----
H21: Customer's Race (White>Non-White)	7	638	.21	4.99	57.50	$\chi^2(6)=7.74, n.s.$
<u>Proposition 7: Cost Considerations</u>						
H22: Cash vs. Credit	16	2,333	.12	5.11	138.64	$\chi^2(15)=68.45, p<.0001$
H23: Presence of Credit Insignia <sup>b</sup>	2	106	.29	2.79	4.67	-----
H24: Eval. of Meal Price	7	532	.18	3.81	30.53	$\chi^2(6)=8.10, n.s.$
H25: Alcohol Consumption	19	2,414	.03	1.47	---	$\chi^2(18)=34.79, p<.02$
H26: Bill Size Squared	38	4,226	.05	3.27	112.43	$\chi^2(37)=192.69, p<.0001$

<sup>a</sup> The bill size effects used tip size as the dependent variable. All other effects used bill-adjusted tip size as the dependent variable. The unweighted mean effect size is reported.

<sup>b</sup> These variables were manipulated with random assignment of subjects to conditions.

**TABLE 3**

SUMMARY OF META-ANALYTIC COMPARISONS OF HETEROGENIOUS EFFECT SIZES FOR MALE AND FEMALE SERVERS

Effect	Male servers			Female servers			Z contrast
	No. of effects	Mean r	Combined z	No. of effects	Mean r	Combined z	
<u>Hypothesis 6</u>							
Customer's Sex (M > F)	5	-.07	-1.45	7	.16	4.31	3.84 (p < .001)
<u>Other Effects</u>							
Bill Size	8	.89	39.96	11	.87	39.13	2.07 (p < .04)
PF x Bill Size	3	.19	3.20	5	.08	2.18	1.39 (n.s.)
No. Trips to Table	3	.01	-.04	3	.18	3.61	1.87 (p < .07)
No. Items Served	—	—	—	—	—	—	—
PF x No. Trips	2	.04	.79	2	.18	2.60	1.15 (n.s.)
Giving Name	—	—	—	—	—	—	—
Cash vs. Credit	7	.07	2.22	6	.17	4.04	1.67 (p < .10)
Alcohol Consumption	5	.22	4.94	6	-.02	-.55	3.90 (p < .0001)
Bill Size Squared	8	.09	2.83	11	-.01	-.49	2.09 (p < .04)

Table 4: Summary of meta-analytic comparisons of effect sizes for dinner and other meal times

Effect	Dinner Time			Other Meal Times			z Contrast
	# Effects	Mean r	Combined z	# Effects	Mean r	Combined z	
Bill Size	23	.86	54.44	22	.80	45.87	6.55 (p < .0001)
PF x Bill Size	16	.13	5.04	5	.03	1.06	1.97 (p < .05)
No. Trips to Table	—	—	—	—	—	—	—
No. Items Served	3	.07	1.17	10	.08	2.44	.18 (n.s.)
PF x No. Trips	—	—	—	—	—	—	—
Giving Name	—	—	—	—	—	—	—
Bill Size Squared	21	.03	1.61	17	.08	3.10	1.31 (n.s.)
Cash vs. Credit	9	.08	3.59	7	.16	3.66	1.56 (n.s.)
Alcohol Consumption	14	-.00	-.18	5	.11	3.17	2.26 (p < .03)
Server's Sex (F > M)	—	—	—	—	—	—	—
Customer's Sex (M > F)	11	.07	2.19	7	.03	.94	.85 (n.s.)
Dining Party Size	22	.01	-.83	17	.03	1.23	.52 (n.s.)

TABLE 5

SUMMARY OF META-ANALYTIC COMPARISONS OF HETEROGENIOUS EFFECT SIZES ACROSS  
RESTAURANT EXPENSIVENESS

Effect	No. of effects	Pearson r	Z contrast
<u>Hypothesis 3</u>			
Bill Size	41	.39	11.21 (p < .0001)
<u>Other Effects</u>			
PF x Bill Size	21	.46	3.05 (p < .01)
No. Trips to Table	6	.05	.19 (n.s.)
No. Items Served	11	.14	.60 (n.s.)
PF x No. Trips	4	-.13	.34 (n.s.)
Giving Name	—	—	—
Cash vs. Credit	14	.28	2.93 (p < .005)
Alcohol Consumption	16	-.12	.84 (n.s.)
Bill Size Squared	36	.45	5.59 (p < .0001)
Server's Sex (F > M)	—	—	—
Customer's Sex (M > F)	16	-.34	1.78 (p < .08)